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Potential immunological effects of fermentable fibres in athletes

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Abstract

Recent findings point at novel benefits of specific fibres, like inulin, as their fermentation metabolites can improve mucosal immunity and protect against infections (1,2). This outcome is desirable for athletes, who are at increased exposure to oxidative damage and thus risk of upper respiratory tract infections (URTI). However, whether inulin can improve immune function in athletes is unknown. We investigated the effect of supplementation with inulin-enriched foods on salivary immunoglobulin A (sIgA), a marker of immunity associated with URTI, in rugby players. We hypothesised that inulin supplementation would increase sIgA, and such change would be greater than that observed in a group following a diet without inulin supplementation. Ten rugby players volunteered for this pilot study (24.2 ± 5.4 years, 93.2 ± 18.7 kg). Participants were randomly assigned to either control (CON) or intervention diet (IN) for 3-weeks; and provided with 2% inulin-enriched pasta and bread (IN) or the same products without inulin (CON), to be consumed as part of a prescribed diet plan. sIgA was measured before and after each condition by collecting saliva with validated swabs, and was quantified with enzyme-linked immunoassay. Differences within and between groups were assessed with paired-samples t-test and ANOVA, respectively. Relationships between inulin intake and sIgA were explored with Spearman's correlation and regression analysis. There was a significant increase in sIgA following inulin supplementation ($p = 0.002$), which was significantly different to CON (+ 53.6 ± 44.7 and 5.8 ± 37.2 mg/dL, $p = 0.054$). Average inulin intake was 10.9 ± 1.6 g/day, and it was positively associated with sIgA ($r_s = 0.661$, $p = 0.038$) and correlated with sIgA changes ($r^2 = 0.438$, $p = 0.037$). There were no significant differences in energy intake between and within groups ($p > 0.10$). There were no reports of upper-respiratory tract or other infections during the study period (winter). Some IN participants reported improved bowel function. Inulin-enriched products could represent a simple approach to promote mucosal immunity and gut health in athletes. Larger controlled trials are warranted to confirm the dose-response and long-term effects of inulin supplementation including metabolic and performance outcomes.

Conflict of Interest

There is no conflict of interest